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# NOTES ON THE STONE AGE PEOPLE OF JAPAN

By H. MATSUMOTO

## I. INTRODUCTION

**P**ALEANTHROPOLOGICAL and archaeological studies in Japan have made great advances in the last few years, owing to our successive discoveries of sites yielding many good human skeletons. Unfortunately, the majority of the reports of many Japanese authors were written in Japanese, so that they are generally not available to the authorities of foreign countries. I have been asked, first by Prof. M. Courant and now again by Prof. W. K. Gregory, concerning this subject. I am, at present, a visitor in America and have no Japanese books or papers of reference at hand, so it is impossible for me to make up a precise report with accurate statistical tables. It should be remembered that these notes have been written only from memory.

## II. MORE IMPORTANT STONE AGE SITES YIELDING HUMAN SKELETONS

1. *Kitchen-midden of Aoshima*, Tome district, Province of Rikuzen, northeastern part of the main island. This site, discovered by me, consists of two shell-bearing beds; the upper one is rather poor in shell fragments, but the lower one very rich in this material. The shells are mostly from fresh water and only partly marine. I once obtained fourteen human skeletons from the upper bed of this site, and I am going to proceed with further researches after my return home. The stone implements and pottery of this site are of the type of the earlier stone age of Japan.

2. *Kitchen-midden of Miyato island*, one of the islands of Matsushima, also Province of Rikuzen. The presence of human skeletons at this site was discovered by me and my coöperator, Dr. I. Hayasaka of our institute. This site now belongs to our institute as a ground for our study. It consists of about eighteen

shell-bearing beds and ranges vertically more than twenty feet. I have obtained many good human skeletons from this site, and it is certain that it contains many skeletons as yet untouched. The stone implements and pottery of this site are of the type of the mediaeval stone age of Japan.

3. *Kitchen-midden of Tsukumo*, Asaguchi district, Province of Bitchû, western part of the main island. The first discovery of human skeletons at this site was made by a landlord of this locality, Mr. S. Matsuyeda, by whom I was given a number of human skeletons. Since my preliminary short report of the human skeletons of this site, Profs. Hamada, Suzuki, Kyiono, Ôgushi, and Hasebe have undertaken the study of the same subject. This site is a shell-bearing bed of the mediaeval stone age of Japan, covered over by a layer of the earlier metal age. The bed yielding human skeletons is undoubtedly the former.

4. *Site of Kô*, Province of Kawachi, western middle part of the main island. The first discovery of human skeletons from this site was by Prof. Hamada. He, as well as Professors Ôgushi, Koganei, and Hasebe, are now studying on this site, which is not a shell-heap. The lower layer yields human skeletons, associated with stone implements and pottery of the latest mediaeval stone age, and the upper layer yields pottery of the earlier metal age.

5. *Kitchen-midden of the Cave of Ôsakai*, Himi district, Province of Kaga, northern coast of middle part of the main island. This site, discovered by Mr. J. Shibata, consists of six shell-bearing beds, the lowest bed of which is of the mediaeval stone age, the next two beds of the later stone age, and the upper three beds of the metal age. The second and the fourth beds from below yielded a small number of human skeletons.

6. *Kitchen-midden of Higashi-ataka*, near Kumamoto, Province of Higo, Kiushû. This site has yielded many human skeletons which are, at present, being studied by Prof. Yamazaki. The pottery of this site is said to be of the types of both the mediaeval and the later stone age of Japan. It is not yet clearly known which of the two types of pottery accompanied the human skeletons.

7. *Kitchen-midden of Todoroki*, near Kumamoto, Province of

Higo also. A part of the human skeletons found at this site has been reported upon by Prof. Suzuki, while another part is just being studied by Prof. Yamazaki. I am not informed concerning the pottery of this site, but it may possibly be of the type of either the mediaeval or the later stone age of Japan.

Several other sites known to yield human skeletons are not yet carefully excavated and thoroughly studied.

### III. CHRONOLOGICAL SUBDIVISIONS OF THE STONE AGE OF JAPAN—DEGENERATIVE EVOLUTION OF THE DECORATIVE PATTERN OF POTTERY

All the stone age sites hitherto discovered in Japan belong to the neolithic age, or new stone age, in the European classification. Nevertheless, the divergencies observed to exist among several sites and among several types of remains are very great, suggesting that the stone age of Japan might have had a considerable duration.

Among the neolithic remains, the pottery is one of the most valuable horizon-indicators. Tracing the changes or evolution of the pottery from below upwards in any site, we can clearly recognize the direction of changes or evolution which have taken place in the stone age pottery. According to my own statistical studies of the pottery collected by careful, serial excavations, the following important changes have been proved occurring in the stone age pottery of Japan:

1. Richer in large bottomed pottery below, and richer in small bottomed pottery above.
2. Richer in thick pottery below, and richer in thin pottery above.
3. Richer in pottery with coarse and rough mat impression below, and richer in that with fine and nice mat impression above.
4. Richer in pottery with ornamental pattern of lower order below, and richer in that with ornamental pattern of higher order above. As to the ornamental pattern of the same order, richer in the more well-developed ornamental pattern below, and richer in the more upwardly retired ornamental pattern above.
5. Richer in reddish or brownish pottery in the earlier than in

the mediaeval stone age, and richer in very dark pottery in the mediaeval than in the earlier stone age; and again, richer in very dark pottery in the mediaeval than in the later stone age, and richer in reddish or yellowish pottery in the later than in the mediaeval stone age.

Now I have to discuss the orders of the decorative pattern of pottery. They are:

1. Bas-relief decorative pattern of curve and spiral design. This decorative pattern is observed in the earliest pottery of Japan. It consists of wide bas-relief ribbons of curve and spiral design

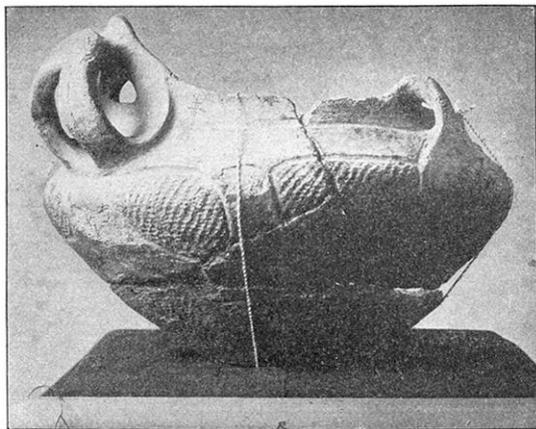


FIG. 11.—Type of pottery of the lower earlier stone age.

applied on the outer surface of pottery. A small number of very elaborate handles also of bas-relief and spiral design developed on the oral margin of pottery, as a part or parts of this decoration. This decoration usually coexisted with mat impression on the outer surface of the same pottery.

This decoration progressed upwards, toward the oral margin of pottery, uniting at last with the original oral edge so as to form a double edge. Hand in hand with the retirement of this decoration, the elaborate handles became smaller and simpler also.

2. Incised decorative pattern of curve and spiral design. This decorative pattern was of the second order, developing upwards,

just below the retiring bas-relief decoration of the first order. The decoration of this second order was sometimes bas-relief consisting of narrow ribbons especially in its earlier stage, but most commonly it was incised throughout. This decoration might sometimes stand alone by itself, but usually coexisted with mat impression on the outer surface.

This decoration reached its highest tide, when the decoration of the first order had just retired to the very margin of the mouth of pottery. At its highest tide, it occupied almost the whole outer

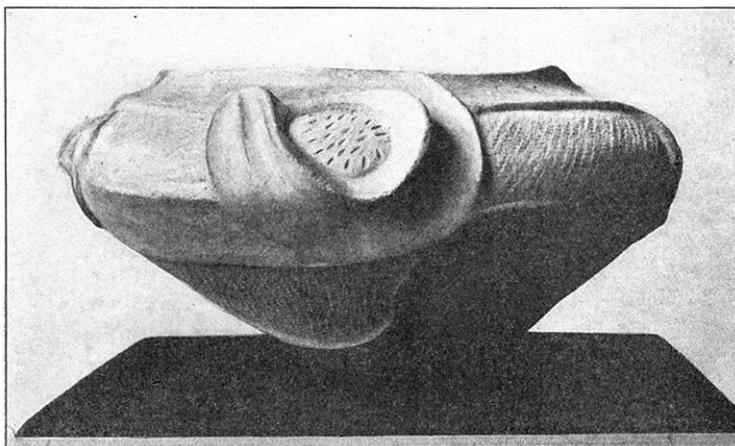


FIG. 12.—Type of pottery of the lower earlier stone age.

surface of the vessel or of the body of it, in the vessels without or with differentiated neck, respectively. After its highest tide, it again retired upwards, toward the oral margin or the lower border of the neck, respectively, in the pottery without or with differentiated neck. In its retiring stages, its area was bordered both above and below by one or a few incised streaks encircling the pottery. As a result of its extreme retirement, there was left only one or a few horizontal streaks around the vessels just below the oral margin or at the upper half of its shoulder. This decorative pattern of the second order thus converging into horizontal streaks, may be looked upon as the decorative pattern of the primary order of geometrical design.

3. Decorative pattern of free mat impression. The mat impression in general was one of the earliest characters of the stone age pottery. Very often it was included in the area occupied by the decorative pattern of curve and spiral design, while in other cases it was exclusive and free from that area. The free mat impression to be discussed here is, of course, that of the latter cases. Such a free mat impression was the decoration of the third order.

As a typical case, this decoration arose and developed upwards, just below the lower border of the retiring decorative pattern of the second order. In another case, it took the same course just below the retiring decorative pattern of the first order. At its highest tide, it occupied almost the whole outer surface of the



FIG. 13.—Type of pottery of the upper earlier stone age.

vessel or of the body of it. After its highest tide it had again just the same destiny as its forerunners.

In its earlier stage the mat impression in general was coarse and rough; but afterwards it became finer and nicer. The free mat impression of the later stage assumed very often a repetition

of pinnate arrangement. Thus the decorative pattern of the fine, pinnately arranged, free mat impression prevailed in the later mediaeval stone age of Japan.

4. Decorative pattern of the secondary order of geometrical design. As a typical case, a few or many incised parallel streaks arose encircling the vessel just below the retiring free mat impression. These stripes correspond to the decoration of the fourth order in general, and that of the secondary order of geometrical design.

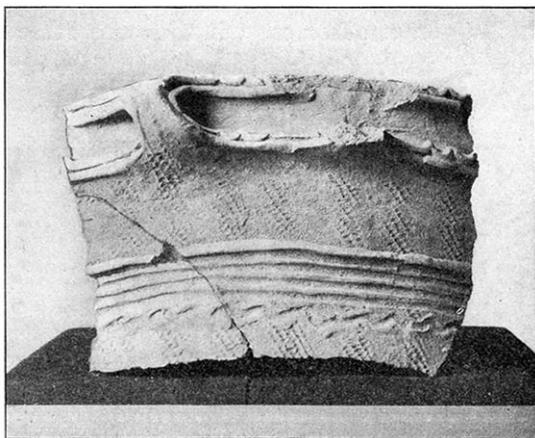


FIG. 14.—Type of pottery of the upper earlier stone age.

This decoration developed upwards hand in hand with the retirement of the free mat impression. When the free mat impression vanished as a result of its extreme retirement, both the primary and secondary decorative patterns of geometrical design became united, forming a compound decorative pattern of geometrical design. In another instance, the decorative pattern of the third order in general persisted as a mat impression itself, or as its modification, an incised false mat impression; then, both the primary and secondary decorative patterns of geometrical design and the mat impression or false mat impression formed together a compound decorative pattern of geometrical design.

The degenerating handles of the vessels belonging to the decorative pattern of the first order persisted until the last of the curve

and spiral design; then they disappeared almost entirely. They coexisted no longer, as a rule, with the well-established decorative pattern of geometrical design, except in the stone age pottery of Riu-kiu.

It may be true that certain elements of the geometrical decorative pattern were imported into Japan from the continent; but I cannot agree by any means with those authors who declare that the whole geometrical decorative pattern was so derived. In my opinion, the change of the decorative pattern of the stone age pottery of Japan from curve and spiral design to geometrical design was chiefly an evolution but not a revolution. Consequently, we are obliged to look upon the artifacts of the stone age of Japan



FIG. 15.—Type of pottery of the middle mediaeval stone age.

as those made by the genuine ancestors of a greater part of us modern Japanese. This view will be confirmed again by a study of the racial types of both the stone age and the modern Japanese.

Looking over all these changes of the stone age pottery, it may safely be said that they were chiefly degenerative in the limitation of the decorative pattern. It appears that the stone age pottery changed or evolved according to the law of the economy of labor and time. Again, the succession of the various orders of decorative pattern corresponds well to Dollo's law as is well known in our palaeontology.

In accordance with these facts and considerations, I subdivide the stone age of Japan chronologically as follows:

1. *Earlier stone age*, or period of bas-relief pattern of curve and spiral design.

Pottery large and very thick; mat impression, very common, coarse, and rough; bas-relief, decorative pattern of curve and



FIG. 16.—Human figure of the middle mediaeval stone age.

spiral design very common; handles, very large and elaborate (figs. 11 and 12).

(1) Lower earlier stone age:—bas-relief pattern of the first order very well developed.

(2) Upper earlier stone age:—bas-relief pattern of the first order usually limited to the upper part of the vessel (figs. 13 and 14).

2. *Mediaeval stone age*, or period of incised pattern of curve and spiral design.

Pottery, moderately thick to thin; mat impression, very common, coarse, and rough to fine and nice; bas-relief patterns very few; incised decorative patterns of curve and spiral design, common; handles, large to very small.

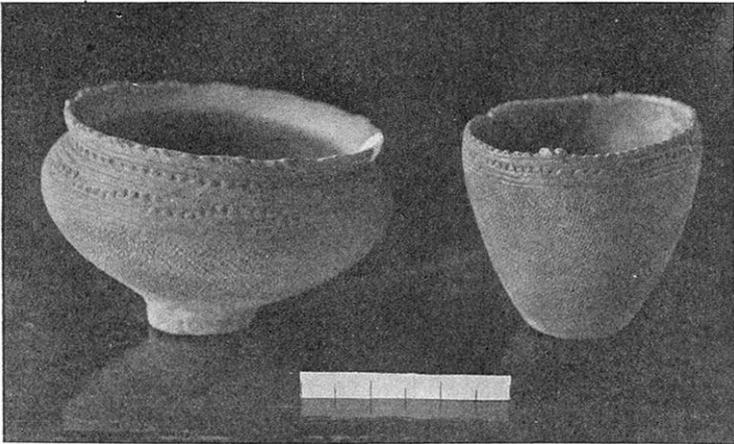


FIG. 17.—Type of pottery of the upper mediaeval stone age.

(1) Lower mediaeval stone age:—pottery, moderately thick; mat impression, coarse and rough; incised patterns of curve and spiral design, very common, very well-developed; handles, large and elaborate.

(2) Middle mediaeval stone age:—pottery, thin; mat impression, fine and nice; incised pattern of curved and spiral design, very common, very often limited to the upper part of the vessel; handles, small and simple (figs. 15 and 16).

(3) Upper mediaeval stone age:—pottery, thin; mat impression, fine and very nice; free mat impression decoration, very well-developed, very often assuming a repetition of pinnate arrangement; incised decorative pattern of curve and spiral design, persisting but rather less common, mostly limited to the upper part of the vessels; handles, small and simple, or entirely absent (fig. 17).

3. *Later stone age*, or period of incised patterns of geometrical design. Pottery, thin; mat impression, less common to entirely absent, besides incised false mat impression; bas-relief decorative patterns, very few; decorative patterns of curve and spiral design, entirely absent; that of geometrical design, common; handles, almost entirely absent, those of the secondary order, different from that of the handles of the preceding ages, might sometimes be present.

(1) Lower later stone age:—mat impression decoration, persisting, usually limited to the upper part of the vessels; incised false mat impression, present.

(2) Upper later stone age:—mat impression decoration, entirely



FIG. 18.—Type of pottery of the Hanibe-Iwaibe period.

absent; incised false mat impression, rather common. The later stone age was followed by the Hanibe-Iwaibe period which belongs to the metal age.

4. *Hanibe-Iwaibe period*, or earlier metal age. Coexistence of the Hanibe pottery, which is very similar to the pottery of the upper later stone age, and the Iwaibe pottery, which is a grayish or dark bluish hard pottery and resembles very much that of the ancient Koreans (figs. 18 and 19).

This period corresponds to the protohistorical and earlier historical ages of Japan. The chronological succession was very gradual in western Japan, while it was interrupted by the absence of the later stone age culture in northeastern Japan where the mediaeval

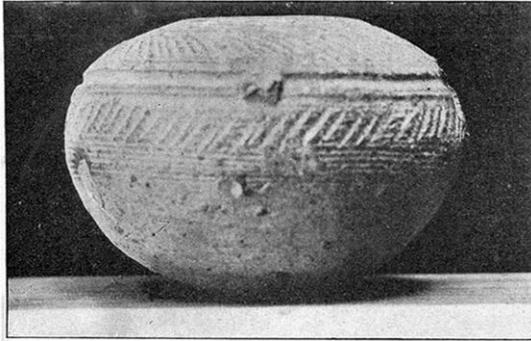


FIG. 19.—Type of pottery of the Hanibe-Iwaibe period.

stone age culture was followed immediately by the Hanibe-Iwaibe culture. That is, the changes of the culture were an evolution throughout in western Japan, but partly an evolution and partly a revolution in northeastern Japan.

#### IV. BURIAL CUSTOMS OF THE STONE AGE PEOPLE

The stone age burials of Japan were almost always contracted, as clearly observed by Mr. Uchida, in the site of Tsukumo; by Prof. Suzuki, in the site of Higashi-ataka; by Prof. Hamada and Mr. Torii, in the site of Kô; by Prof. Ôgushi, in the sites of Kô and Tsukumo; by Prof. Kiyono, in the site of Tsukumo; by myself, in the sites of Miyato island, Aoshima, and Kô; by Prof. Koganei and Mr. Shibata, in the site of Kô; by Prof. Hasebe, in the sites of Kô and Tsukumo; and so on; but very rarely extended, as observed by Prof. Kiyono and Ôgushi in the site of Tsukumo.

The bodies, skeletons when we discover them, were laid in tombs either with the back directly down or slightly to one side. The burials on the back appear to be more common in the sites of western Japan, as Tsukumo, Kô, and Higashi-ataka, and in the earlier stone age sites of northeastern Japan, as Aoshima and

certain less important sites (fig. 20); the tilting toward one side appears to be more common in the later sites of northeastern Japan, as Miyato island (fig. 21). In these, the tilting toward the right side was much more common than that toward the left.

The direction of the long axis of the body was exceedingly variable in the sites of northeastern Japan. In the site of Aoshima



FIG. 20.—Burial of the Aoshima type, first stage of the first period.

the head, not the face, of the skeleton was directed north or east or south but never west; in the site of Miyato island, southeast (most common direction in this site) or northeast or northwest but never southwest. It is reported by Profs. Ôgushi and Hasebe that the northeast and southeast directions were most common in the sites of Tsukumo and Kô respectively.

Double burials have been observed to be present very rarely. I once discovered a double burial consisting of a very aged male and a child in the site of Miyato island. The aged man was



FIG. 21.—Miyato island burial.

laid on his right side, assuming an attitude embracing the child who was laid on his back and left side. Mr. Matsuyeda has also discovered a double burial consisting of two adults in the site of Tsukumo. I do not know the sex of these two adults; but, judging

from the photograph presented by Mr. Matsuyeda, one or both of these adults might be that of a male. Both of them were laid on their backs.

Two female skeletons from the site of Aoshima were found with ear ornaments of clay, one on each ear. These ear ornaments are dumb-bell shaped, the anterior and posterior halves being almost of equal size and shape. This type of ear ornament is a common characteristic of the sites of western Japan and the earlier sites of northeastern Japan.

Skeletons of one young female and of a child at the site of Miyato island were found with stone beads as ear ornaments,—one for each ear. The beads belonging to the young woman were made of jade and are charmingly executed. The jade might have been imported into Japan from the continent at such an ancient time. Again, the child skeleton of the double burial mentioned above was found with eight stone beads on the position corresponding to his right ear. Though not attached to any skeleton, another type of ear ornament of clay was obtained from this site. It is rather cup-shaped, the anterior half being much larger than the posterior. This type of ear ornament is characteristic of the later sites of northeastern Japan.

It has also been reported by Profs. Ôgushi, Koganei, and Hasebe, that several skeletons from the site of Kô were found bearing dumb-bell shaped ear ornaments of clay or stone ear ornaments shaped like an incomplete ring; and by Prof. Ogushi that one skeleton from the site of Tsukumo was found bearing ear ornaments made of deer's antler and shaped like an incomplete quadrangular ring. Prof. Ôgushi considers that the ear ornaments made of deer's antler and shaped like an incomplete ring might be prototypes of the stone ear ornaments of similar shape, while Prof. Hamada looks upon the latter as prototypes of the metal ear rings of the earlier metal age of Japan.

One very stout male skeleton from the site of Miyato island was discovered bearing two compact bands consisting of some eighty beads made of bird's bones, around his wrist, and just in front of his wrist five very nice and elegant ornaments, one of which

was made of deer's antler and four of boar's tusks (the deer was a large variety of the sika, and the boar was a very gigantic race or species and is now everywhere extinct).

It has also been reported by Profs. Kiyono, Ôgushi, and Hasebe that some skeletons from the sites of Tsukumo and Kô were found bearing an elegant ornament made of deer's antler, just in front of the wrist.

The majority of the skeletons from the site of Miyato island were found bearing the red tint of iron oxide on the upper portions of their bodies, especially on the face and breast. It might have been thrown over or tinted over the dead body by the mourning relatives and intimates. I have witnessed the fact that the child and young female skeletons were especially rich in this red tint.

One skull from the site of the cave of Ôsakai was reported by Mr. Shibata to have been found tinted all over the face with red color. In the other sites, such as Aoshima, Tsukumo, Kô, Higashi-ataka and Todoroki, no skeleton with red paint was ever discovered.

I have learned from Dr. Krischtowitsch that a quite analogous burial of skeletons bearing red color was once observed in a certain kulkan near Odessa, excavated by the Geological Institute of the University of Odessa. It may also be analogous to what has been observed in certain Indian burials.

Several skeletons from the site of Miyato island were found lying on a layer of ashes and cinders. This layer of ashes and cinders might have been purposely prepared in the grave for the reception of the dead. In all the other important sites no skeleton was ever found lying on such a layer of ashes and cinders.

As a unique example in the site of the Miyato island, I found one large, heavy, round stone placed directly on a baby skeleton. It is reported by Profs. Ôgushi and Hasebe that such a large, heavy, round stone laid on the thoracic region of a skeleton has been found by no means rarely in the site of Kô. Certain anthropologists consider that such a stone might have been put on the dead to prevent the waking of the spirit. According to the Ainuan belief, any spirit wakened from the dead is a demon, which causes various evils to living people.

As reported by Messrs. Kasai, Motoyama, and Prof. Ôgushi, large jars containing a baby skeleton were sometimes found in certain sites including that of Tsukumo.

As I have clearly observed in the sites of Aoshima and Miyato island, the graves were very shallow. It appears that the dead were laid down in such shallow graves and covered with earth, which formed then a very low heap above the body. The vertical depth from the top of the heap to the floor of the grave measured only about a foot or less. As the grave was so shallow, the highest parts of the skull and knees were almost above the level of the original surface of the ground at the time of burial.

#### V. CUSTOM OF REMOVING OR MODIFYING SEVERAL TEETH ARTIFICIALLY

The existence of such a custom in the stone age of Japan was first noticed by Prof. Koganei. Afterwards, very abundant data on this subject were added by Profs. Ogushi, Kiyono, Satô, Hasebe and myself.

It appears to me that this custom prevailed not at all or but little in the earlier stone age, so that no sign of the existence of such a custom has yet been discovered in the site of Aoshima; it then increased gradually, so that this custom was demonstrated only in a part of the adults from the sites of Nakazuhama, Prov. of Rikuzen, and Yoyama, Prov. of Shimôsa; it then reached its highest development in the middle to later mediaeval stone age, so that evidence of this custom was found in all the adults from the sites of Miyato island and Tsukumo; it then decreased gradually, so that it was apparent only in part of the adults from the sites of Kô and the second bed from below of the cave of Ôsakai; and finally it disappeared everywhere during the following metal age.

This custom is quite variable as to its types, which may be distinguished as follows. The typical example of the first is to remove the pair of upper canines. The modifications of this type are to remove the upper canine of one side and the second upper incisor or the first upper premolar of the other side; to remove one

of the second incisors, the canine and the first premolar of one side and two of the same of the other side of the upper jaw; and to remove two or three of the same of either side of the upper jaw.

The typical practice of the second type is to remove all the four canines of the upper and lower jaws. The modifications of this type correspond to those of the first type in both the upper and lower jaws. In a few examples the first upper incisors were also removed.

The third type and its modifications are to remove all the lower incisors or all the lower incisors and canines; besides they correspond to the first type and its modifications in the upper jaw.

Another very unusual modification of the third type is to remove the pair of upper canines and all the lower incisors and canines and to modify artificially the natural form of all the four upper incisors. A unique example of this rare type has been obtained by Prof. Koganei from the site of Kô. This example may possibly be feminine; her first upper incisors are three-pointed with two artificial indentations and her second upper incisors two-pointed with one artificial indentation.

The first and second types and their modifications are proved to exist in the sites of eastern middle to northeastern Japan, while all the three types and their modifications are found to exist in the sites of western Japan. According to Prof. Hasebe, the third type and its modifications appear to be limited to female skeletons, in the sites of Tsukumo and Kô; but according to Prof. Ôgushi and myself there might be some exceptions to this rule.

This custom was not found at all in the child skeletons. It appears that the operation of removing several teeth had been carried on in the adolescent stage in both men and women. Such a custom of removing or modifying several teeth is reported to exist among many races with primitive culture. In the neighborhood of Japan, some of the aborigines of Formosa and the Philippines have such a custom, while the modern Ainu have no such custom at all.

## VI. SKELETAL CHARACTERS OF THE STONE AGE PEOPLE OF JAPAN—RACIAL TYPES

The goodly number of skeletons hitherto found in the stone age sites of Japan all show a uniformity in certain characters, with a considerable divergency in certain other characters. Their common characters are as follows:

*Common Characters.* Calvarium, rather low and flattened above, being not very convex; lambda-inion curve, long and strongly curved; inion-opisthion curve, very short. *Os incae* or interparietals, often well-developed, consisting of two to four conspicuous pieces. Glabella, *eminentia supra-glabellaris* and superciliary ridges usually united together so as to form a conspicuous, rhomboidal, boss-like projection just above the root of nose. Face, shallow, very wide with jugals prominently projecting. Zygomatic arches, very deep and stout. Upper edges of orbits, almost horizontal instead of being divergent downwards. Nasals, usually narrow, strongly arched up, being strongly curved in horizontal section; but, in a few of the female skulls, they are observed to be rather flattened and not arched up so much. Ascending bar of mandible, nearly perpendicular to the horizontal bar. Dental arches curved like a half of either an ellipse or a circle, the anterior parts being smoothly curved and not angular at the corners corresponding to the canines.

Vertebrae, not very stout. Sacrum, appearing to be usually dolichohieric and curved very feebly. Ribs, extraordinarily deep and stout. All the long bones of both the upper and lower limbs are very stout, with very well-developed projections and keels for the attachment of tendons of muscles; hence it is also evident that the muscles might also be very well-developed. Metacarpals, metatarsals, and phalanges appearing to be rather slender.

Proportion of the length of fore-arm to that of upper arm, near that in the Ainu, being larger than that in the major modern Japanese. Greater tuberosity of humerus, high, arising almost to the same level as the head; deltoid process strong bicipital. Both radius and ulna curved very conspicuously; process of radius, very strong.

Femur, curved and obtorted very strongly; *linea aspera*, extraordinarily well-developed; third trochanter, often well-developed and sometimes attaining an enormous size. In some skeletons the upper halves of the femurs are strongly compressed antero-posteriorly. Tibia, strongly curved, sometimes strongly compressed laterally; anterior keel, blunt, being rounded in horizontal section

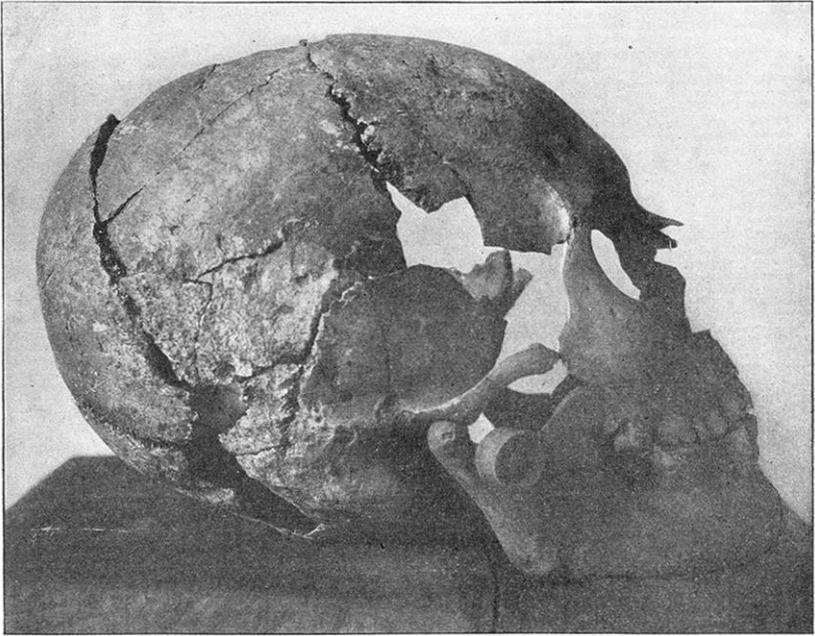


FIG. 22.—Aoshima skull, first stage of the first period.

(that in the major modern Japanese forms a sharp cutting edge). Fibula, extremely stout with a number of very well-developed vertical keels and a number of concave surfaces bordered by these keels, very often strongly compressed laterally. The longer axis of the posterior surface of calcaneum inclines inward down, and outward up, instead of being nearly vertical or just the reverse. Lower surface of foot, flat, being not very concave.

Almost all these common characters are also represented in the skeletons of the modern Ainu. Again, in many of these common

characters the stone age people of Japan and the Ainu appear to resemble the upper palaeolithic people and a certain part of the neolithic people of Europe.

Notwithstanding these common characters are represented, the skeletons from the stone age sites of Japan show a considerable divergence in the other characters. I will proceed with my description, subdividing them into a number of racial types for convenience as follows:

A. *Aoshima Type*. Skeletons from the site of Aoshima, and a part of the skeletons from the site of Miyato island. Moderately short, male adults standing about five feet two to four inches. Large-headed. Dolicho-mesocephalic. Glenoid fossae, shallow; post-glenoid spine, rather deep. Shallow-faced; though the face is not so shallow in absolute measurement, yet it is so broad as to be ranked among shallow-faced types in facial index; forehead, retired, and face, convex in lateral view, more or less strongly prognathous. Floor of the nasal cavity and front surface of the upper jaw communicated together by a pair of grooves. Torus palatinus, often well-developed. Mandible, very strong; chin, not very strongly projected, and rounded in upper and lower view, except in some female skulls. Palatine and dental arches of both jaws, more or less long and large, like a half of an ellipse. Teeth, strong; molars, often of unreduced type, the upper ones being usually four-cusped and the lower ones usually five-cusped (fig. 22).

B. *Miyato Dwarf Type*. Part of the skeletons from the site of Miyato island; also a part of those from the sites of Tsukumo and Kô. Very short, male adults standing about five feet to five feet two inches. Size of head, moderate; meso-brachycephalic, and also to brachycephalic. Glenoid fossae and post-glenoid spine, moderate. Shallow-faced, the face being very shallow both in absolute measurement and in proportion; forehead, not retired; straight-faced, orthognathous.

Floor of the nasal cavity and front surface of the upper jaw parted from each other by a ridge. Torus palatinus, not well-developed. Mandible, rather weak; chin, strongly projected, angular in upper and low view, quite like that of the European.

Palatine and dental arches of both jaws, short and small, like a half of a circle. Teeth, weak; molars, of reduced type, the second and third upper ones being usually three-cusped and the second and third lower ones usually four-cusped.

The dwarf type of the sites of Tsukumo and Kô, which is provisionally referred to the present type, appears to be more brachycephalic than the typical type of the site of Miyato island.

C. *Tsukumo Tall Type*. Part of the skeletons from the site of Tsukumo, and also of Kô. Tall, male adults standing about five feet six or seven inches. Large-headed, but may be moderate if taken in proportion to the height of body. Meso-brachycephalic. Glenoid fossae, deep; post-glenoid spine, very strongly reduced. Shallow-faced; forehead, not retired; straight-faced; orthognathous. Floor of the nasal cavity and front surface of the upper jaw well-parted from each other by a ridge. Torus palatinus, not well-developed. Mandible, weak; chin, strongly projected, angular in upper and lower jaw, quite like that of the European. Palatine and dental arches of both jaws, short and small like a half of a circle. Teeth, very weak; molars of reduced type; the second and third upper ones being usually three-cusped and the second and third lower ones usually four-cusped. Tibia and fibula, long, both in absolute length and in proportion to the length of the femur.

The longer bones of the lower limbs of this type much resemble those of the Crô-Magnon type, though the former type is evidently much more progressive than the latter type in many cranial characters. Moreover, some broad-headed skulls of the Miyato dwarf and Tsukumo tall types resemble very strongly the skulls of the Furfoot-Grenelle type. The Miyato dwarf and the Tsukumo tall types are quite like the European in the general structure of the face and especially in that of the jaws and teeth. Indeed, they are nearer the European than the Ainu are to the same.

## VII. RACIAL TYPES OF THE MODERN JAPANESE AND AINU

It has become evident by the studies of Profs. Koganei and Hasebe that there are two racial types among the modern Ainu

of Hokkaido. One type, including about two-thirds of the total number of the modern Ainu of Hokkaido, comparatively tall (about five feet three to four inches or near that) and comparatively long-headed (cephalic index, ca.  $75-76\pm$ ), while the other type, comprising about one-third the total number, is very short (about five feet to five feet one inch) and comparatively broad-headed (cephalic index, ca.  $79-80\pm$ ). As far as I can judge from Mr. Torii's numerical tables, the modern Ainu of the Kurile islands appear to consist chiefly of the first type. The modern Ainu of Saghalin being also comparatively tall and long-headed, appear to me also to consist chiefly of the first type.

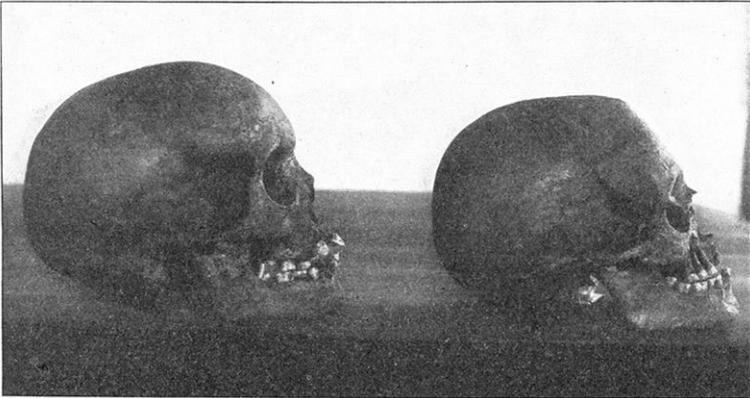


FIG. 23.—*Left*, modern Ainu skull; *Right*, skull of the Miyato type.

The first type of the modern Ainu appears to correspond well to the Aoshima type of the stone age, and the second type of the same to the Miyato dwarf type of the stone age (fig. 23).

Analytical studies of the racial types of the modern Japanese have been made by Prof. Hasebe and Mr. Matsumura. As a result of their analytical studies, four racial types have been recognized to exist among the modern Japanese,—Ishikawa and Okayama types by Prof. Hasebe, and Chikuzen and Satsuma types by Mr. Matsumura. The Ishikawa type is characterized by the very short stature (five feet to five feet one inch), not very broad head (cephalic index, ca.  $78\pm$ ), straight and shallow face and weak jaws;

the Okayama type by the tall stature (five feet five inches or more), broad head (cephalic index, ca. 82 or more) convex and deep face and strong jaws; the Chikuzen type by the tall stature (five feet five inches or more) and not very broad head (cephalic index, ca.  $78\pm$ ); and the Satsuma type by the very short stature (five feet one inch or near that) and broad head (cephalic index, ca.  $82\pm$ ).

I have been informed privately by Mr. Matsumura that both his Chikuzen and Satsuma types may be shallow-faced. The Ishikawa type is to be met with abundantly in the northern middle part and northeastern part of the main island; the Okayama type in the coastal districts around the Inland sea, in Kinai, *i.e.*, the former capital Kyôto and its vicinity, and in the western middle part of the main island; the Chikuzen type in the northern part of Kiushû; and the Satsuma type in the southern parts of both Kiushû and Shikoku.

The Ishikawa type appears nearly, though not yet thoroughly, to correspond to the Miyato dwarf type of the stone age, and the Chikuzen type also nearly to the Tsukumo tall type of the stone age. The Ishikawa and Chikuzen types may possibly be Mongolianized survivors of the Miyato dwarf and Tsukumo tall types, respectively. In the stone age already, the shorter type of the sites of Tsukumo and Kô appears to be more broad-headed than the typical Miyato dwarf type of the site of Miyato island. Then, there may be a certain probability that both these dwarf types belong to local varieties of one and the same branch which show the divergency, being more long-headed northeastwards and more broad-headed southwestwards. If this view be correct we may expect the presence of a racial type characterized by short stature and broad head in the extreme southwestern Japan. Then, the Satsuma type fits strictly to the expected racial type. The Okayama type, which has been looked upon by Prof. Hasebe himself to be the Korean type of the Mongolian stock, is not yet actually discovered from the stone age sites of Japan. This type might have invaded Japan either at the close of the stone age or at the dawn of the metal age.

### VIII. NATURAL POSITION OF THE STONE AGE PEOPLE OF JAPAN— CONCLUDING REMARKS

The Ainu, nowadays, are a quite isolated and well characterized race. Such an isolated distribution cannot in any case be looked upon as a primary condition. The races of mankind are comparable to the local varieties of animals. We have learned that the local varieties, or a group of local species closely allied with each other, should primarily be ranged or distributed like a chain or a network. The isolated distribution of the Ainu, nowadays, represents only a single link of a chain or a network. Thus, our search for the presumed missing links which formerly connected the Ainu to their primary relatives of far distant lands, proceeds. Now, our search is being answered by the successive discoveries of the human skeletons of the stone age people of Japan.

Many European authorities consider that the Caucasian, Ainu, and Australian are to be grouped together in a great racial stock. And, I think they are right. In many physical characters the Ainu appear to be much more progressive than the Australian and a little more primitive than the European.

As already stated, the stone age people of Japan are very near the Ainu, and some of them are more closely related to the European than the Ainu due to the same being evidently more progressive than the Ainu. And it is almost evident that they are to be grouped together with the Caucasian, so far as the Ainu should be grouped together with the latter. I have come to look upon the Miyato dwarf and Tsukumo tall types as corresponding to two discoveries of the missing links of the great racial chain, namely the Aino-Caucasian. The Aoshima type, of which little altered survivors may be represented by the more typical type of the modern Ainu, might probably be very near the ancestral type of both the Miyato dwarf and the Tsukumo tall type.

The Aino-Caucasian range from Japan to Europe along the margin of the Asiatic continent, while the Mongolian occupy the central main part and the north of the same. Why has such a distribution arisen? It is obvious from the "theory of center of evolution and dispersion" developed by the eminent authorities

of the American Museum of Natural History. The Aino-Caucasian are pre-Mongolian in a certain point of view; the former corresponds to the group which had been forced to move eastwards, southeastwards, southwards, southwestwards, and westwards—always outwards, toward the margin of the continent from the center of evolution and dispersion—by the latter.

I call the Japanese Aino-Caucasian—the Aoshima, Miyato dwarf and Tsukumo tall types, including the modern Ainu,—all together by the name Pan-Ainu. Among the Pan-Ainu, the Aoshima type was the first arrival in Japan. This type is found from the earlier stone age of northeastern Japan almost as a pure race, and from the mediaeval stone age of the same as a race mixed with the next type. Nowadays, it lives in Hokkaido as a race mixed with the next type, and in the Kurile islands and in Saghalin almost as a pure race.

The next to arrive or to arise in Japan was the Miyato dwarf type and possibly also its presumed cousins in western Japan. This type is found from the mediaeval stone age of northeastern Japan as a race mixed with the foregoing type; and its presumed cousins are found from the mediaeval stone age of western Japan as a race mixed with the following type. Nowadays, it lives in Hokkaidô as a race mixed with the foregoing type, and in northeastern Japan and in the north central part of the main island as a mixed race more or less Mongolianized; and its presumed cousins live in southwestern Japan as a mixed race more or less Mongolianized. This type and its presumed cousins are separated from each other in recent distribution by the two following newcomers.

The third to arrive or to arise in Japan was the Tsukumo tall type. It is found from the mediaeval stone age of western Japan as a race mixed with the presumed cousins of the Miyato type. Nowadays, it lives in the northern part of western Japan as a mixed race Mongolianized; and also scattered in every part of Japan, for this type appears to be very common in the former knight class of Japan.

The last newcomer to Japan was the Okayama type of the Mongolian stock. This type is not yet actually found from the

stone age of Japan. Nowadays, it occupies middle western Japan including the former capital of Japan and its vicinity.

The racial and cultural assimilation had been carried on just the reverse of the racial arrivals. It would appear that the Miyato dwarf type had assimilated the Aoshima type to a certain extent in northeastern Japan, while its presumed cousins had been assimilated to a great extent by the Tsukumo tall type in western Japan. There are certain reasons for assuming that the embryonal empire of Japan had been founded by the Okayama type, or by the union of this type and the surrendered aboriginals of western Japan, who consisted of the Tsukumo tall type and the presumed cousins of the Miyato dwarf type. A large part of the surrendered aboriginals served as the warriors of the Imperial army. These warriors invaded eastern and northeastern Japan conquering and assimilating, step by step, the wild aboriginals of these districts. Thus, the type, which has lost its national independence last, was the very Ainu who were the first to arrive in Japan.

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